

WHAT IS CLAIMED IS:

1. A method of storing failed packet data units (PDUs) in a packet-transmission system, in which the PDUs are encoded to include redundancy, and punctured according to a specified puncturing scheme prior to transmission, the method comprising:
 - receiving a transmission;
 - processing the received transmission to retrieve a PDU;
 - de-puncturing the PDU;
 - decoding the de-punctured PDU; and
 - if the decoded PDU contains errors, then storing the PDU and requesting retransmission.
2. The method of claim 1, wherein the step of storing the PDU comprises:
 - compressing the PDU; and
 - storing the compressed PDU.
3. The method of claim 2, wherein the PDU is transmitted over a plurality of different transmission bursts.
4. The method of claim 2, wherein the step of processing the received transmission comprises:
 - generating a sequence of soft-values representative of each bit in the received transmission;
 - calculating and storing a scale factor representative of the soft-values within the sequence; and
 - generating a sub-sequence of soft-values representative of a transmitted PDU.
5. The method of claim 4, wherein the scale factor is an average of the absolute values of the soft-values within the sequence.

6. The method of claim 4, wherein the step of compressing the PDU comprises:

storing the sign of each soft-value within the sub-sequence.

7. The method of claim 2, wherein the PDU is compressed in its punctured format.

8. The method of claim 7, further comprising:

determining, prior to decoding the de-punctured PDU, if there are any compressed PDUs stored in memory that correspond to the currently received, de-punctured PDU;

if there are any corresponding PDUs stored in memory then, for each corresponding PDU:

decompressing the PDU;

de-puncturing the decompressed PDU;

combining the de-punctured, decompressed PDU with the currently received, de-punctured PDU;

decoding the combined PDU; and

if the decoded combined PDU contains errors, then compressing and storing the currently received punctured PDU.

9. The method of claim 2, wherein the PDU is compressed in its de-punctured format.

10. The method of claim 9, further comprising:

determining, prior to decoding the de-punctured PDU, if there are any compressed PDUs stored in memory that correspond to the currently received, de-punctured PDU;

if there are any corresponding PDUs stored in memory then, for each corresponding PDU:

decompressing the PDU;

combining the decompressed PDU with the currently received, de-punctured PDU;

decoding the combined PDU; and

if the decoded combined PDU contains errors, then compressing and storing the currently received de-punctured PDU.

11. The method of claim 10, wherein the step of processing the received transmission comprises:

generating a sequence of soft-values representative of each bit in the received transmission;

calculating and storing a scale factor representative of the soft-values within the sequence; and

generating sub-sequence of soft-values representative of a transmitted PDU.

12. The method of claim 11, wherein the scale factor is an average of the absolute values of the soft-values within the sequence.

13. The method of claim 11 wherein the step of compressing the PDU comprises:

storing the sign of each soft-value within the sub-sequence.

14. The method of claim 13, wherein the step of decompressing the corresponding PDU comprises:

multiplying the stored sign of each soft-value in the sub-sequence by the stored scale factor.

15. A receiver comprising:

a soft output detector configured to generate a sequence of soft-values representative of each bit within a received transmission;

a decoder;

local memory; and

a processor, the processor comprising logic configured to:
process the retrieved transmission in order to retrieve a PDU;
de-puncture the PDU; and
compress and store in the local memory the retrieved PDU if
the de-punctured PDU fails the decoding process.

16. The receiver of claim 15, wherein the processor further includes logic configured to:

determine, prior to decoding the de-punctured PDU, if there are any
corresponding compressed PDUs stored in memory;
for each stored PDU the logic is configured to:
decompress the PDU;
de-puncture the decompressed PDU;
combine the de-punctured, decompressed, PDU with the
currently received de-punctured PDU; and
compress and store the retrieved PDU, if the decoded combined PDU
fails the decoding process.

17. A computer-readable storage medium having stored therein one or
more instructions that cause a processor to perform the steps of:

processing a received transmission to retrieve a PDU;
de-puncturing the PDU;
decoding the de-punctured PDU; and
If the decoded PDU contains errors, then compressing and storing the
punctured PDU.

18. The computer-readable storage medium of claim 17, further
comprising one or more instructions that cause a processor to perform the
steps of:

determining, prior to decoding the de-punctured PDU, if there are any
corresponding compressed PDUs stored in memory;

if there are compressed PDUs stored in memory then, for each compressed PDU:

- decompressing the PDU;

- de-puncturing the decompressed PDU;

- combining the de-punctured, decompressed, PDU with the currently received, de-punctured PDU;

- decoding the combined PDU; and

if the decoded combined PDU contains errors, then compressing and storing the currently received punctured PDU.